

What is claimed is:

1. A sensor material comprising at least a stimulus-responsive high polymer gel, a bio-substance-responsive material and a light modulation material.

2. The sensor material according to claim 1, wherein at least the bio-substance-responsive material and the light modulation material are present inside the stimulus-responsive high polymer gel.

3. The sensor material according to claim 1, wherein the light modulation material is present inside the stimulus-responsive high polymer gel while the bio-substance-responsive material is present outside the stimulus-responsive high polymer gel.

4. The sensor material according to claim 1, wherein the stimulus-responsive high polymer gel swells or shrinks according to a concentration of the bio-substance.

5. The sensor material according to claim 1, wherein a concentration of the light modulation material included in the stimulus-responsive high polymer gel is equal to or higher than a saturated absorption concentration or a saturated scattering concentration when the stimulus-responsive high polymer gel shrinks.

6. The sensor material according to claim 1, wherein a ratio of a volume of the stimulus-responsive high polymer gel in swelling state to a volume of the stimulus-responsive high polymer gel in shrinking state is 5 or more.

7. A sensor comprising at least the sensor material according to claim 1 and an optical waveguide.

8. A detection method for a bio-substance using the sensor material

according to claim 1, comprising the step of detecting a change in tone on the basis of swelling or shrinking of the stimulus-responsive high polymer gel.

9. A detection method for a bio-substance using the sensor material according to claim 1, comprising the step of detecting a transmitting light therethrough on the basis of swelling or shrinking of the stimulus-responsive high polymer gel.

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